

WHAT IS CLAIMED:

1. An isolated DNA molecule from a *Bacillus* species encoding a beta subunit of a DNA polymerase III-type enzyme, the isolated DNA molecule either:
 - (i) comprising a nucleotide sequence of SEQ ID NO: 173;
 - (ii) encoding an amino acid sequence of SEQ ID NO: 174; or
 - (iii) hybridizing to the complement of SEQ ID NO: 173 under hybridization conditions comprising at most about 0.9M sodium citrate buffer at a temperature of at least about 37°C.
2. The isolated DNA molecule according to claim 1, wherein the *Bacillus* species is *Bacillus stearothermophilus*.
3. The isolated DNA molecule according to claim 1, wherein the DNA molecule encodes an amino acid sequence of SEQ ID NO: 174.
4. The isolated DNA molecule according to claim 1, wherein the DNA molecule comprises a nucleotide sequence of SEQ ID NO: 173.
5. The isolated DNA molecule according to claim 1, wherein the DNA molecule hybridizes to the complement of SEQ ID NO: 173 under hybridization conditions comprising at most about 0.9M sodium citrate buffer at a temperature of at least about 37°C.
6. An expression system comprising an expression vector into which is inserted a heterologous DNA molecule according to claim 1.
7. A host cell comprising a heterologous DNA molecule according to claim 1.
8. A method of producing a recombinant thermostable beta subunit of a DNA polymerase III-type enzyme from a *Bacillus* species, said method comprising:

transforming a host cell with the heterologous DNA molecule according to claim 1 under conditions suitable for expression of the beta subunit, and isolating the beta subunit.

9. An isolated DNA molecule from *Bacillus stearothermophilus* encoding a beta subunit of a DNA polymerase III enzyme, wherein the encoded beta subunit can cooperate with a clamp loader for loading of a beta clamp onto a DNA strand.